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HVI Fan Verification – OSA Exhaust Termination Exception

Green MEP is requesting a cohesive code implementation between The California Energy Commission (CEC) and The State Mechanical Department in the forthcoming 2025 California Mechanical Code (CMC), which entails the elimination of exhaust-only ventilation. We look at this as an avenue to promote widespread HVI verification for outside air fans.

Our firm specializes primarily in multifamily design for MEP and energy modeling for over 30,000 dwelling units annually, including numerous modular projects catering to low-income housing. Given our extensive expertise in this domain, we anticipate substantial challenges arising from the removal of exhaust-only ventilation, particularly if supplementary measures are not implemented to enable viable design alternatives.

To address this concern, we propose a strategic initiative aimed at facilitating HVI verification for outside air fans in building projects that may have previously been left unchecked. Such an approach not only aligns with the upcoming code changes from the CEC, but also serves to advance environmental sustainability objectives.

Our Objective:

We aim to advocate for the 2025 California Energy Commission (CEC) and California Mechanical Code (CMC) to introduce an exception concerning the exhaust clearance requirements for multifamily dwelling units from outside air intake locations. Specifically, we propose a reduction in the forced air intake distance clear from all dwelling unit exhaust terminations when utilizing an HVI-certified outside air fan, to be verified on mechanical schedules through local mechanical jurisdiction.

Currently, the verification of HVI-certified appliances is only enforced through residential kitchen hoods per 160.2(b)2.B.ii and ERVs per 160.2(b)2.B.iii in the 2022 Energy Code and reference appendices. However, there is no truly clear reference for outside air fans needing to be registered in the HVI directory, with only a few references in the 2022 NR compliance manual where hoods are also listed, as it may be assumed only hoods need to be registered in an official directory when used for whole house ventilation.

Per NR Compliance Manual: 11.4.2.12:

Compliance with the fan efficiency requirements for ventilation can be verified by reviewing product certification data from the HVI database or the AHAM Certified Range Hood Directory. Linear interpolation of rated performance parameters may be used when calculating the fan efficacy at the required outdoor airflow rate as described in Reference Residential Appendix RA3.7.4.4. The HVI database can be found at the following link: www.hvi.org/hvi-certified-products-directory. The AHAM Directory can be found at the following link:

https://www.aham.org/AHAM/What_We_Do/Kitchen_Range_Hood_Certification.

Per NR Compliance Manual 11.4.2.1:

- Air-moving equipment used to meet the whole-dwelling unit ventilation requirement and the local exhaust requirement, including kitchen local mechanical exhaust, must be rated by HVI or AHAM, which provides ratings for kitchen local mechanical exhaust, for airflow and sound:
 - Whole-dwelling unit ventilation and continuously operating local exhaust fans must be rated at a maximum of 1.0 sone (measurement of sound).
 - Demand-controlled local exhaust fans must be rated at a maximum of 3.0 sone.
 - Kitchen exhaust fans must be rated at a maximum of 3.0 sone at one or more airflow settings greater than or equal to 100 CFM. (As described in Section 11.4.2.0, the Standard requires kitchen range hoods to have a higher airflow than 100 CFM, but the range hoods must be tested for sound at a minimum of 100 CFM.)

This adjustment will utilize an engineered solution to mitigate the 10-foot separation requirement between outside air intakes and exhaust for multifamily dwelling units, particularly as exhaust-only ventilation will be phased out. Such an exception empowers HVAC engineers and energy consultants to recommend efficient and quiet fans that can verify their performance. This method can provide a reasonable exception for buildings that might otherwise struggle to comply with balanced ventilation requirements. Fan manufacturers can provide installation instructions, providing reduced termination clearances from exhausts.

An example of reduced termination clearance has already been implemented by the Los Angeles Department of Building and Safety (LADBS) modification, which aligns with ASHRAE 62.1 Appendix B2.2 and allows for a reduced separation of 5.8 feet based on a 280 CFM hood for gas ranges when terminations are angled downward.

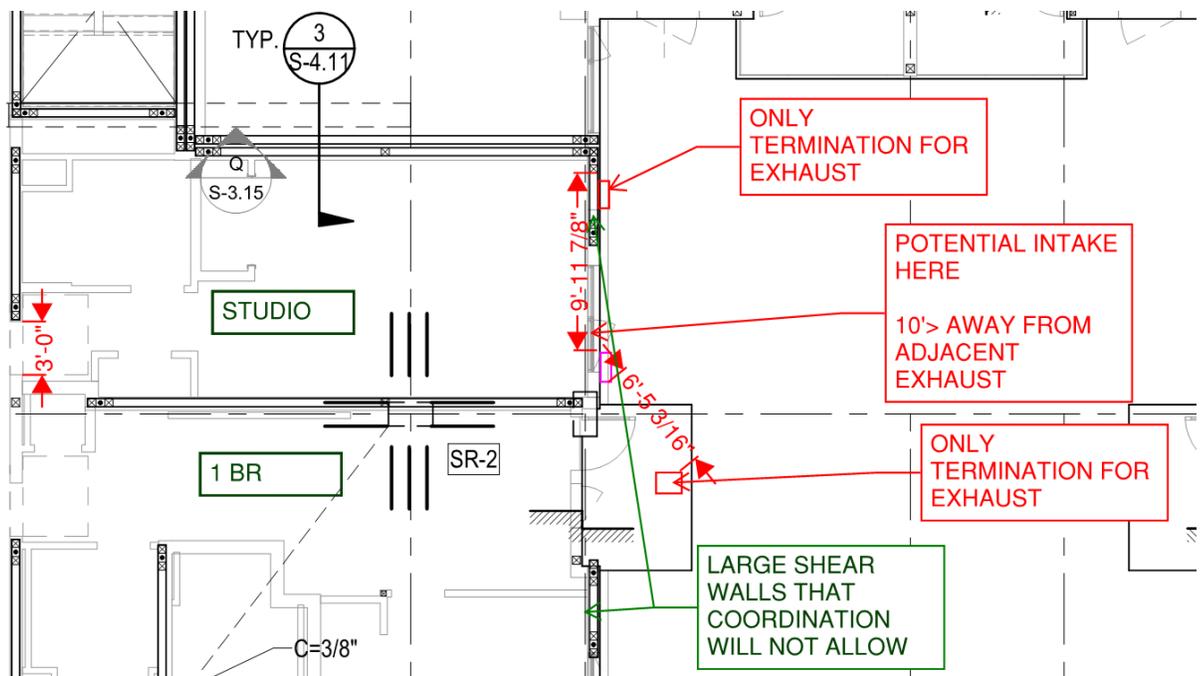
Incorporating ASHRAE 62.1 calculations alongside this approach has been crucial to achieving reduced clearance for all dwelling unit exhausts, including kitchens.

Our Rationale for Proposal:

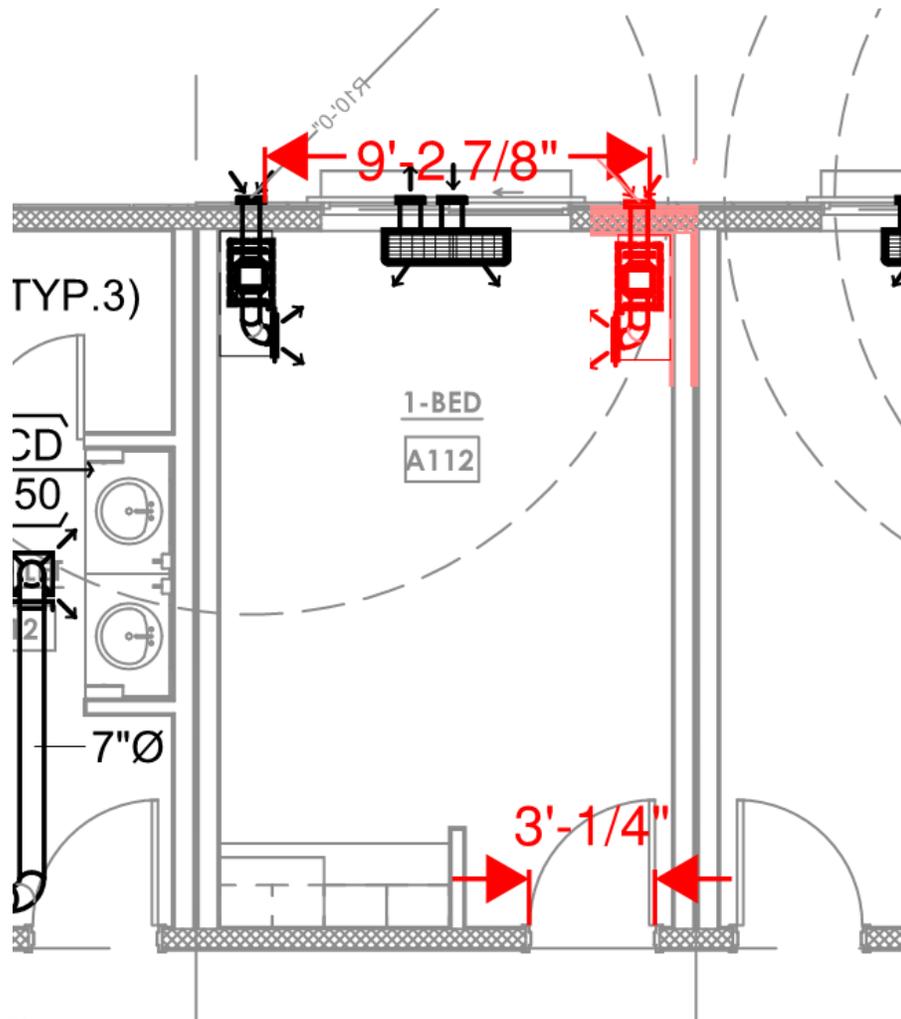
As exhaust-only ventilation is slated for removal in the 2025 code cycle, we anticipate encountering significant challenges both in design conception and practical implementation, particularly concerning the mandated 10-foot separation between OSA intakes and exhaust terminations. This issue will particularly arise in smaller studio units, notably in modular construction, which often has limited exterior space for termination.

Common Challenges Illustrating the Need for Change:

1. Structural constraints frequently dictate termination placement, especially when shear walls are wide, limiting penetration points. In some instances, during the design phase, buildings needed to revert to exhaust-only ventilation due to the inability to maintain the 10-foot separation requirement. The utilization of the LADBS' reduced clearance modification has been necessary on multiple occasions to ensure code compliance, without which the design would have been rendered unfeasible.



2. Sizing limitations pose a significant obstacle for low-income housing projects, particularly in modular construction where ductwork extending to the roof is not practical. Multifamily modular projects often lack exterior wall width to accommodate the 10-foot clearance requirement for a balanced ventilation system, posing compliance challenges with mechanical codes.



These examples highlight the pressing need for regulatory adjustments to facilitate more flexible ventilation design solutions, particularly in scenarios where rigid clearance requirements pose significant barriers to viable design outcomes.

Our solution explained:

We would like to have coordination between the CMC and CEC to allow an exemption for this separation of 10' for HVI verified fans in the upcoming 2025 code cycle. Many inline fans specify less than 10' termination distances to avoid infiltration of exhaust air.

While HERS verifiers typically check the HVI registry for other ventilators, local mechanical plan checkers can review cutsheets provided on plans similarly to the dryer elbow to run table to verify the manufacture performance cutsheets. Typically, when the local mechanical jurisdiction allows for dryer elbow and length table to show a dryer duct run is meeting the manufacturer's

guidelines, a run cannot meet CMC 504.4.2.1. Adding an additional exception to Section 407.2.1 will prove to be a significant change for a feasible multifamily design.

Similar infiltration methods using installation manuals have been implemented in IMC jurisdictions such as Washington, where infiltration is also stated to be less than 10% from exhausts and have a listed distance away from exhaust in the installation manual.

This adjustment is essential to mitigate potential conflicts, particularly in smaller multifamily units, where adherence to standard clearance requirements may prove unattainable.

What we need from CEC and CMC:

We ask that if the CEC takes an interest in our proposal, we can have coordination between the State Energy and Mechanical Departments. The CMC will need to publish the exemption regarding HVI-registered fans. To reiterate, LADBS already allows a similar ASHRAE 62.1 distance reduction per modification with all intakes, but this will allow all major cities that adopt the 2025 State Code to push for this exception. Our proposal will push for registered systems to be inserted in low-income multifamily housing or smaller modular units that otherwise would not be verified.

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